

Asset Pricing Modeling Test Based on Behavioral Stochastic Discount Factor (SDF): A Case Study of Tehran Stock Exchange

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Abstract

In this paper, we estimate the asset pricing model based on random discount factor (SDF) according to traditional and behavioral approach in the Tehran Stock Exchange by extending the consumption-based asset pricing model (CCAPM), and introducing the sentiment into the utility function, by means of the Euler equations and the generalized method of moments (GMM). To achieving the goal, we apply two indexes of sentiment: the market turnover and the volatility premium. The investigation period is 1390-99 and the case study involves 18 stock exchange groups including 63 companies has listed on the Tehran Stock Exchange. The results demonstrate that the behavioral SDF model is more consistent and efficient with the facts of the Tehran Stock Exchange than the traditional model, and the coefficient of sentiment is significant. The coefficient of risk according to the behavioral model is higher than the traditional model, and in both cases, people have a high time preference rate and are patient.

Keywords: Capital Asset Pricing; CCAPM Model; GMM Method; Stochastic Discount Factor; Behavioral and Traditional) Classic) SDF Model; Sentiment Index.

JEL Classification: g02, g12, e13, E03, C52..

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Bibliography

- A. Bandopadhyaya, and A. L. Jones. "Measuring Investor Sentiment in Equity Markets." *Journal of Asset Management*, 7 (2006): 208-215
- Baker, Malcolm, and J. Wurgler. "Investor sentiment and the cross-section of stock returns." *The Journal of Finance*, No. 61 (4) (2006): 1645-1680.
- Baker, Malcolm, and J. Wurgler. "Investor sentiment in the stock market." *Journal of Economic Perspectives* (2007).
- Baker, Malcolm, and Jeremy C. Stein. "Market liquidity as a sentiment indicator." *Journal of Financial Markets*, No. 7 (3) (February 2004).
- Baker, Malcolm, J. Wurgler, and Y. Yuan. "Global, local, and contagious investor sentiment." *Journal of Financial Economics*, No. 104 (2) (2012): 272-287.
- Barberis, N. *BEHAVIORAL FINANCE Asset Prices and Investor Behavior* (American Economic Association, Yale University, 2017).
- Barberis, Nicholas, Andrei Shleifer, and Robert Vishny. "A model of investor sentiment." *Journal of Financial Economics*, No. 49 (3) (February 1998): 307-343.
- Barberis, Nicholas, Robin Greenwood, Lawrence Jin, and Andrei Shleifer. "X-CAPM: An extrapolative capital asset pricing model." *Journal of Financial Economics*, No. 115 (1) (September 2015): 1-24.
- Berk, Jonathan B. and Jules Van Binsbergen. "Assessing asset pricing models using revealed preference." *Journal of Financial Economics*, No. 119 (1) (January 2016): 1-23.
- Bondt, W. F., and R. Thaler. "Does the stock market overreact?" *The Journal of Finance*, No. 40 (3) (1985): 793.
- Brown, G. W. and M. T. Cliff. "Investor sentiment and the near-term stock market." *Journal of Empirical Finance*, No. 11 (1) (2004): 1-27.
- Burghardt, M. *Retail investor sentiment and behavior: An empirical analysis*. USA: Springer Science & Business Media, 2011.
- Byun, Suk Joon, Sonya S. Lim, and Sang Hyun Yun. "Continuing overreaction and stock return predictability." *Journal of Financial and Quantitative Analysis*, No. 51 (6) (December 2016): 2015-2046.
- Chan, Kalok, Allauden Hameed, and Wilson H. S. Tong. "Profitability of momentum strategies in the international equity markets." *The Journal of Financial and Quantitative Analysis*, No. 35 (2) (June 2000): 153-172.
- Charoenrook, A. *Change in consumer sentiment and aggregate stock market returns*. The Owen Graduate School of Management, Vanderbilt University, 2003.
- Chen, Hong-Yi, Pin-Huang Chou, and Chia-Hsun Hsieh. "Persistency of the momentum effect." *European Financial Management*, No. 37 (1) (July 2016): 1-20.
- Cochrane, John H. *Asset Pricing*, University of Chicago, 2000.
- Cohen, Lauren, and Andrea Frazzini. "Economic links and predictable returns." *The Journal of Finance*, No. 63 (4) (February 2008): 1977-2011
- Cooper, Ilan, and Richard Priestley. "The world business cycle and expected returns." *Review of Finance*, No. 17 (3) (April 2013): 1029-1064.

- Daniel, Kent D. David Hirshleifer, and Avanidhar Subrahmanyam. "Investor psychology and security market under-and overreactions." *The Journal of Finance*, No. 53 (6) (December 1998): 1839–1885.
- Dave Strugnell, Evan Gilbert, and Ryan Kruger. "Beta, size and value effects on the JSE, 1994–2007." *Investment Analysts Journal*, No. 40 (74) (November 2011): 1-17.
- Dennis, Patrick J. and Stewart Mayhew. "Risk-neutral skewness: Evidence from stock options." *Journal of Financial and Quantitative Analysis*, No. 37 (3) (September 2002): 471-493.
- Drakos, K. *Terrorism activity, investor sentiment, and stock returns*. Review of Financial Economics, 2010.
- Fabozzi, Frank J., Neave Edwin H., and Zhou Guofu. *Financial Economics*. Vol. 2, Translated by Reza Taleblou, and, Bahare Oryani. Tehran: The Organization for Researching and Composing Universities Textbooks in the Islamic Sciences and the Humanities (SAMT), 2014.[In Persian]
- Fama, E. F. "The behavior of stock-market prices." *The Journal of Business*, No. 38 (1) (1965): 34-105.
- Fama, E. F., and K. R. French. "Common risk factors in the returns on stocks and bonds." *Journal of Financial Economics*, No. 33 (1) (1993): 3-56.
- Finter, Philipp, Alexandra Niessen, and Stefan Ruenzi. "The impact of investor sentiment on the German stock market." *Zeitschrift Für Betriebswirtschaft*, No. 82 (2) (July 2012): 133-163.
- Fisher, Kenneth L. and Meir Statman. "Consumer confidence and stock returns." *The Journal of Portfolio Management*, No. 30 (1) (September 2003): 115-127.
- Gottesman, A., J. Itzkowitz, Jacoby, and G. Wang. "Investor Sentiment and Asset Pricing" (2014).
- Hong, H., and J. C. Stein. "Disagreement and the stock market (digest summary)." *Journal of Economic Perspectives*, No. 21 (2) (2007): 109-128.
- Jegadeesh, Narasimhan, and S. Titman. "Profitability of momentum strategies: An evaluation of alternative explanations." *The Journal of Finance*, No. 56 (2) (April 2001): 699-720.
- Lutz, Chandler. "The asymmetric effects of investor sentiment." *Macroeconomic Dynamics*, No. 20 (6) (November 2015): 1–27.
- M. Lashgari, "The role of TED spread and confidence index in explaining the behavior of stock prices." *American Business Review*, No. 18 (2) (January 2000): 9.
- Maio, Paulo, and André C. Silva. "Asset pricing implications of money: New evidence." *Journal of Banking & Finance*, forthcoming (2020).
- McLean, R. D., and M. Zhao. "The business cycle, investor sentiment and costly external finance." *The Journal of Finance*, No. 69 (3) (2014): 1377-1409.
- Michailidis, George, S. Tsopoglou, D. Papanastasiou, and Eleni mariola. "Testing the capital asset pricing model (CAPM): The case of the emerging Greek securities market." *International Research Journal of Finance and Economics*, No. 4 (1) (January 2006).

- Novak, Jiril, and Dalibor Peter. "CAPM beta, size, book-to-market, and momentum in realized stock returns." *Finance a Uver: Czech Journal of Economics & Finance*, No. 61 (1) (January 2011): 447–460.
- Ogunmuyia. "Investor' sentiment, stock market liquidity and economic growth in Nigeria." *Journal of Social Sciences*, No. 23 (1) (2010): 63-67.
- Rashid, A. Sumayya Chughtai, and M. Fayyaz. "The impact of investor sentiment on return of different industries in Pakistan." *NICE Research Journal of Social Science*, No. 11 (2) (December 2017): 1-23.
- Rosenberg, Joshua V. and Robert F. Engle. "Empirical pricing kernels." *Journal of Financial Economics*, No. 64 (3) (August 2002): 341-372.
- Schmeling, Maik. "Investor sentiment and stock returns: Some international evidence." *Journal of Empirical Finance*, No. 16 (3) (January 2009): 394-408.
- Shefrin, Hersh. "Investors' judgments, asset pricing factors and sentiment." *European Financial Management*, No. 21 (2) (December 2015): 205-227.
- Shefrin, Hersh. "Risk and Return in Behavioral SDF-based Asset Pricing Models." *Journal of Investment*, no. 6, 4(2007).
- Shefrin, Hersh. *A Behavioural Approach to Asset Pricing*. Amsterdam: Elsevier Academic Press, 2008.
- Shiller, Robert J. "Investor behavior in the October 1987 stock market crash: Survey evidence." National Bureau of Economic Research, No. w2446 (December 1987).
- Statman, Meir, Kenneth L. Fisher, and Deniz Anginer. "Affect in a behavioral asset-pricing model." *Financial Analysts Journal*, No. 64 (2) (May 2008): 20-29.
- Statman, Meir. "Behavioral finance: Finance with normal people." *Borsa Istanbul Review*, No 14 (2) (June 2014): 65-73.
- Uhl, Matthias W. "Reuter's sentiment and stock returns." *Journal of Behavioral Finance*, No. 15 (4) (August 2014): 287-298.
- Verardo, Michela. "Heterogeneous beliefs and momentum profits." *Journal of Financial and Quantitative Analysis*, No. 44 (4) (August 2009): 795–822.
- Ward, Mike, and Chris Muller. "Empirical testing of the CAPM on the JSE." *Investment Analysts Journal*, No. 76 (1) (January 2013): 1.
- Watanabe, Akiko, Yan Xu, Tong Yao, and Tong yu. "The asset growth effect: Insights from international equity markets." *Journal of Financial Economics*, No. 108 (2) (July 2013).
- Zhang, C. *Defining, modeling, and measuring investor sentiment*. Working paper, Department of Economics, Berkeley: University of California, 2008.
- Zhu, B., and F. Niu. *Investor Sentiment, Accounting Information and Stock Price*. Evidence from China, 2016.
- Zin, S. "Are behavioral asset-pricing models structural?" *Journal of Monetary Economics*, No. 49 (2002): 215-228.